FOREST PEST LEAFLET 96

Larch Casebearer in Western Larch Forests

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The larch casebearer (*Coleophora laricella* (Hübner)), an insect of European origin, is distributed worldwide on nearly every species of larch. It appeared in Massachusetts in 1886 and subsequently spread westward throughout the range of tamarack (*Larix laricina* (Du Roi) K. Koch) to central Minnesota and eastern Manitoba.

In 1957 the casebearer was discovered in western larch (*Larix occidentalis* Nutt.) forests around St. Maries, Idaho, approximately 1,700 miles from the last-reported infestations in Minnesota. How the insect was transported to Idaho is not known; natural dispersal occurs only in the moth stage. When the outbreak was discovered, visible defoliation covered 170 square miles of forest southeast of Lake Coeur d'Alene. In the absence of natural controls, population buildup and spread were very rapid; by 1970, the casebearer infested nearly one-half of the western larch within its botanical range (fig. 1).

Description

Larch casebearer moths are silvery to grayish brown with no conspicuous markings (fig. 2). The wings are narrow and fringed and have long, slender, hairlike scales. The wing expanse is about 3/8 inch.

The eggs are cinnamon colored and, under magnification, resemble inverted jelly molds. Each egg has 12 to 14 lateral ridges extending from apex to base (fig. 3).

When fully grown the larva is about 3/16 inch long and dark reddish brown with a black head and thoracic shield. It remains largely concealed within a case made from a section of a needle (fig. 4). Cases made from western larch needles are straw colored and rectangular, becoming

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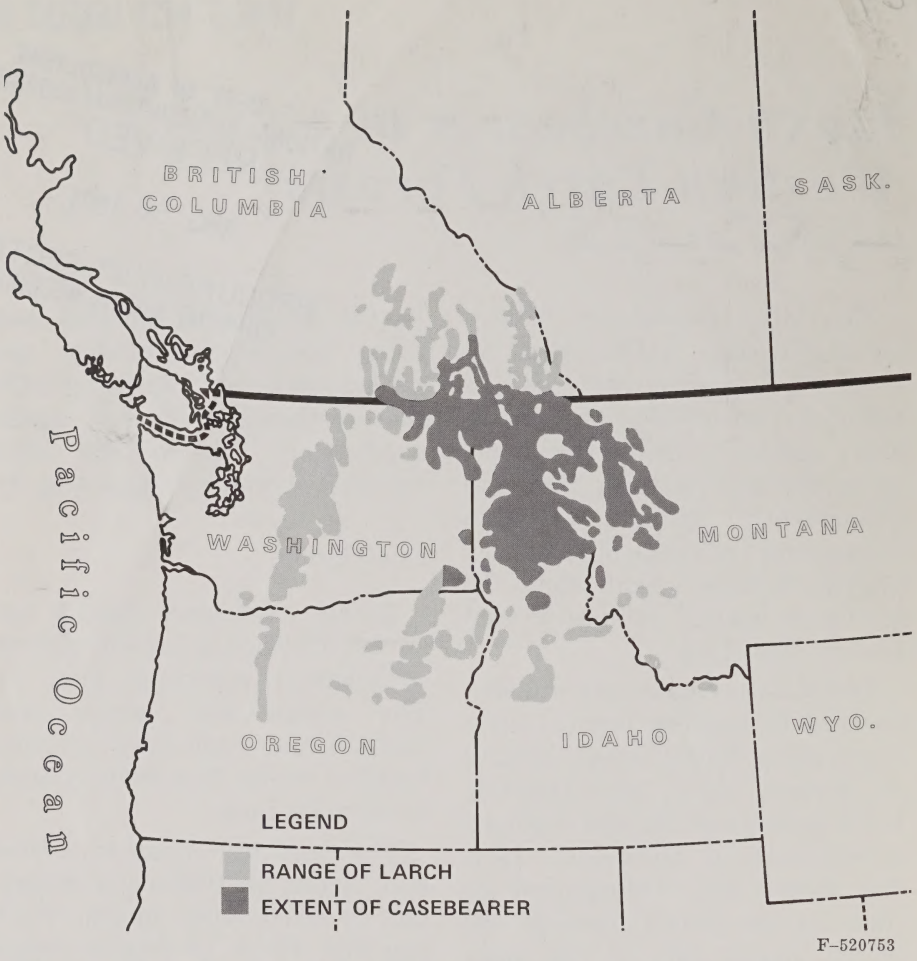

Figure 1.—Botanical range of western larch and extent of larch casebearer infestation within that range.

light gray and cigar shaped at the time the insect pupates (fig. 5).

Life History

The larch casebearer produces one generation each year, the moths emerging from late May until early July. After mating, the female deposits about 50 eggs singly on the needles, usually on the under surface.

Upon hatching, the larva bores through the eggshell directly into the needle. It feeds for about 2 months, mining inside a needle. After hollowing the needle, it constructs a case by lining the inside of the mined section with silk. The case is then chewed free from the rest of the needle. Both ends of the case are open; the larva feeds from one end and pushes the frass out of the other.

Beginning in mid-August, the

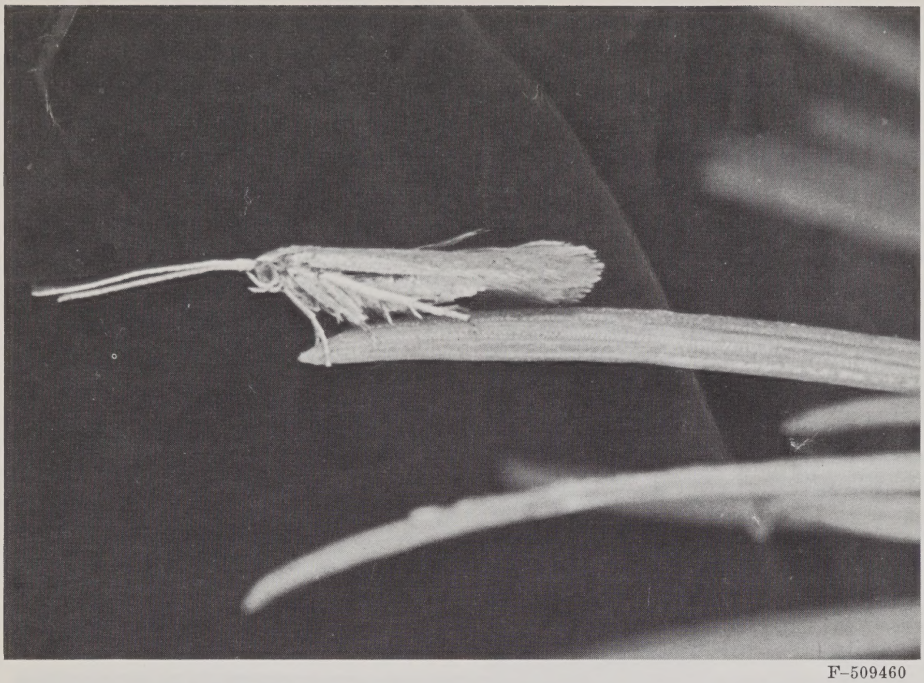

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Figure 2.—Larch casebearer moth in characteristic posture on a needle.

larva feeds externally upon the foliage. It fastens its case firmly to a needle with a pad of silk and then mines the interior as far as it can reach without actually leaving the case. After mining one needle, the larva chews its case free and moves on to another.

The casebearer spends the winter as an immature, third-instar larva inside its case. As cold weather approaches in late October, larvae leave the foliage and attach their cases securely by silk threads to the twigs. In a dense infestation, clusters of larvae hibernating in their cases may be found at the base of needle fascicles after normal shedding of foliage (fig. 6).

Larvae resume feeding in the spring at the time new needles appear—about mid-April at lower elevations. There are four larval instars. Full growth is reached in late May, after which the larvae pupate inside their cases.

Damage

Damage results chiefly from the feeding of maturing fourth-instar larvae on new foliage in the spring. In severe infestations the foliage is destroyed as soon as it appears; as the needles dry out, the trees acquire a reddish-brown appearance as though scorched by fire.

Because they renew their foliage each year and can produce two crops of needles during a growing season, larch trees are

much more able to recover from defoliation than are other coniferous trees. They can withstand being severely defoliated for 4 or more years before dying. Seriously deteriorated and dead trees are now evident on thousands of acres of young western larch stands infested by larch casebearer in northern Idaho (fig. 7). Although the casebearer is not the sole cause of the mortality, it so weakens many trees that they may die from other causes.

Natural Control

In Eastern States, at least 50 species of parasites are known to attack the larch casebearer; however, few natural control agents are active in western areas. So far, about 13 species of native parasites have been reared from the case bearer in Idaho, Montana, and British Columbia. Since these species have not held casebearer populations in check, considerable emphasis has been given to introducing large numbers of foreign parasites.

Since 1960 thousands of adults of a braconid parasite, *Agathis pumila* (Ratz.), have been introduced into infested western larch stands from New England. Progeny of these introductions have been recovered up to 6 miles from points of release, but the amount

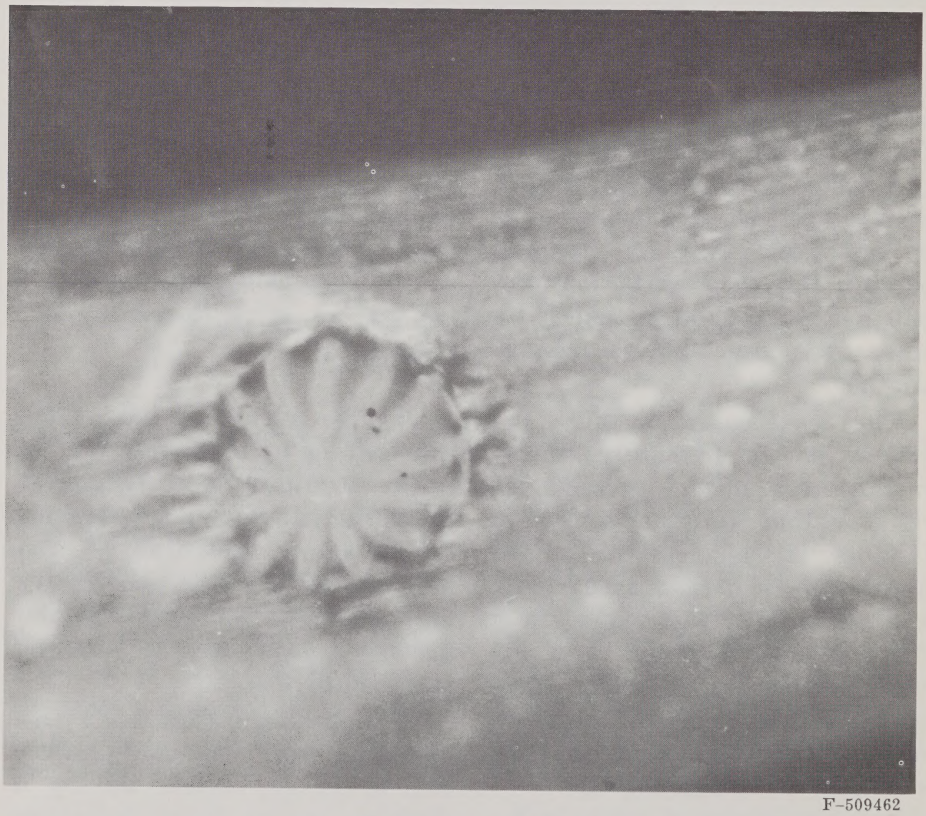

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Figure 3.—Larch casebearer egg.

of parasitism has decreased sharply beyond half a mile. Thus, the effectiveness of the parasite has been limited by its inability to spread throughout the range of the casebearer. Other parasites are being considered for introduction.

Applied Control

Aerial spraying has been very effective in controlling the larch casebearer. Applications of 95 percent ULV (ultra low volume) malathion, undiluted, at a rate of 8 fluid ounces per acre will control fall-feeding (second-instar larvae) and spring-feeding (fourth-instar larvae) larch casebearer populations.

Pesticide Precautions

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or when they may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label

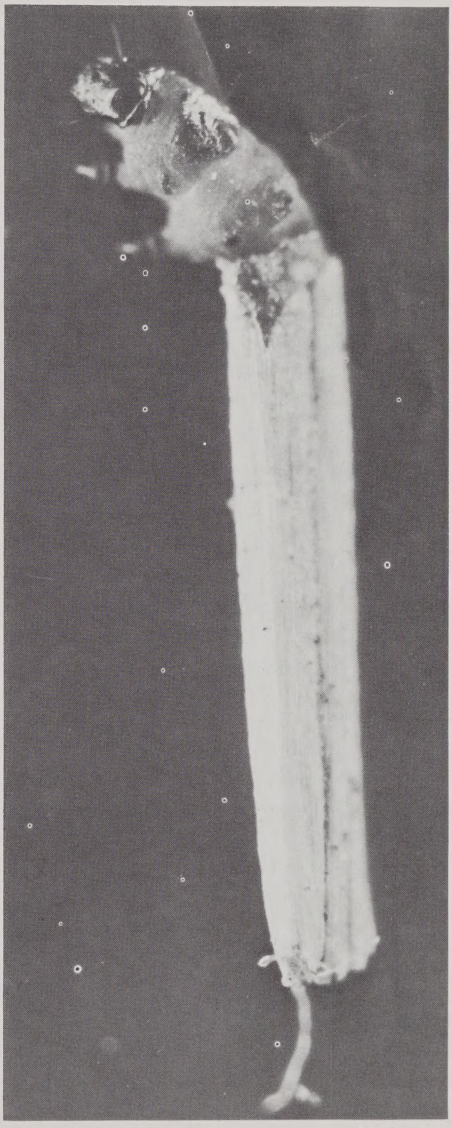

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Figure 4.—Larch casebearer protruding from its case.

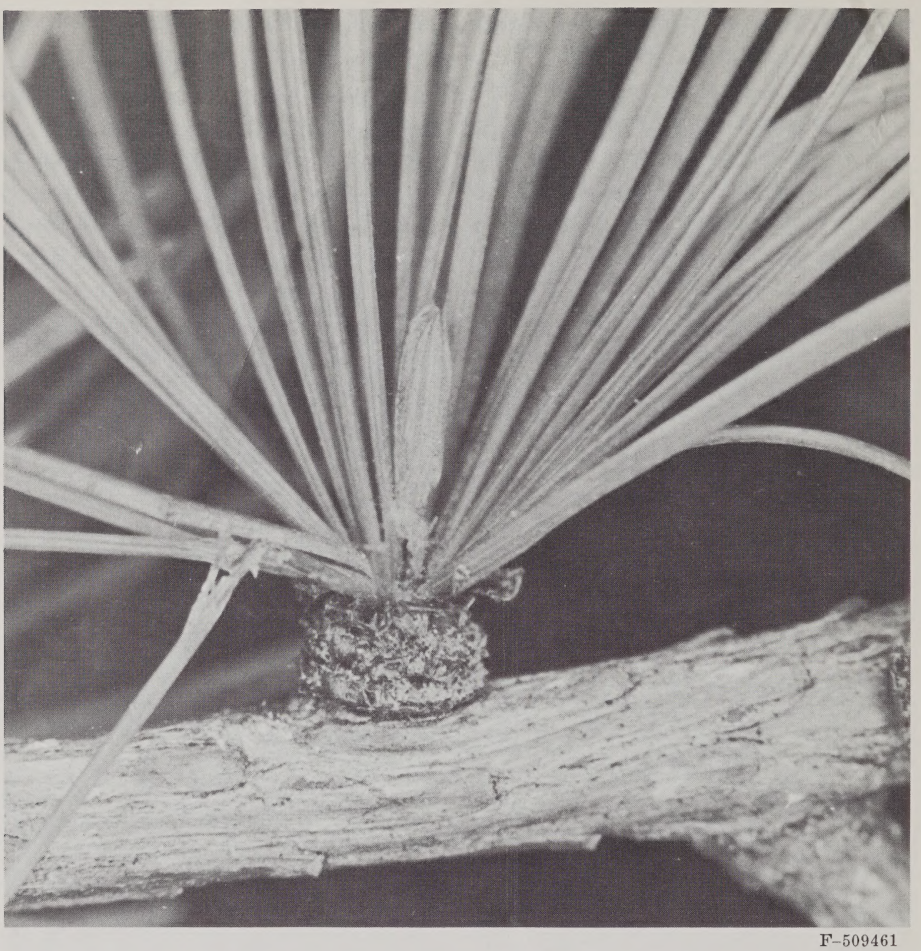

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Figure 5.—Larch casebearer pupal case attached in the center of a needle fascicle.

and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

WARNING: Recommendations for use of pesticides are reviewed regularly. The registrations on all suggested uses of pesticides in this publication were in effect at press time. Check with your county agricultural agent, State agricultural experiment station, or local forester to determine if

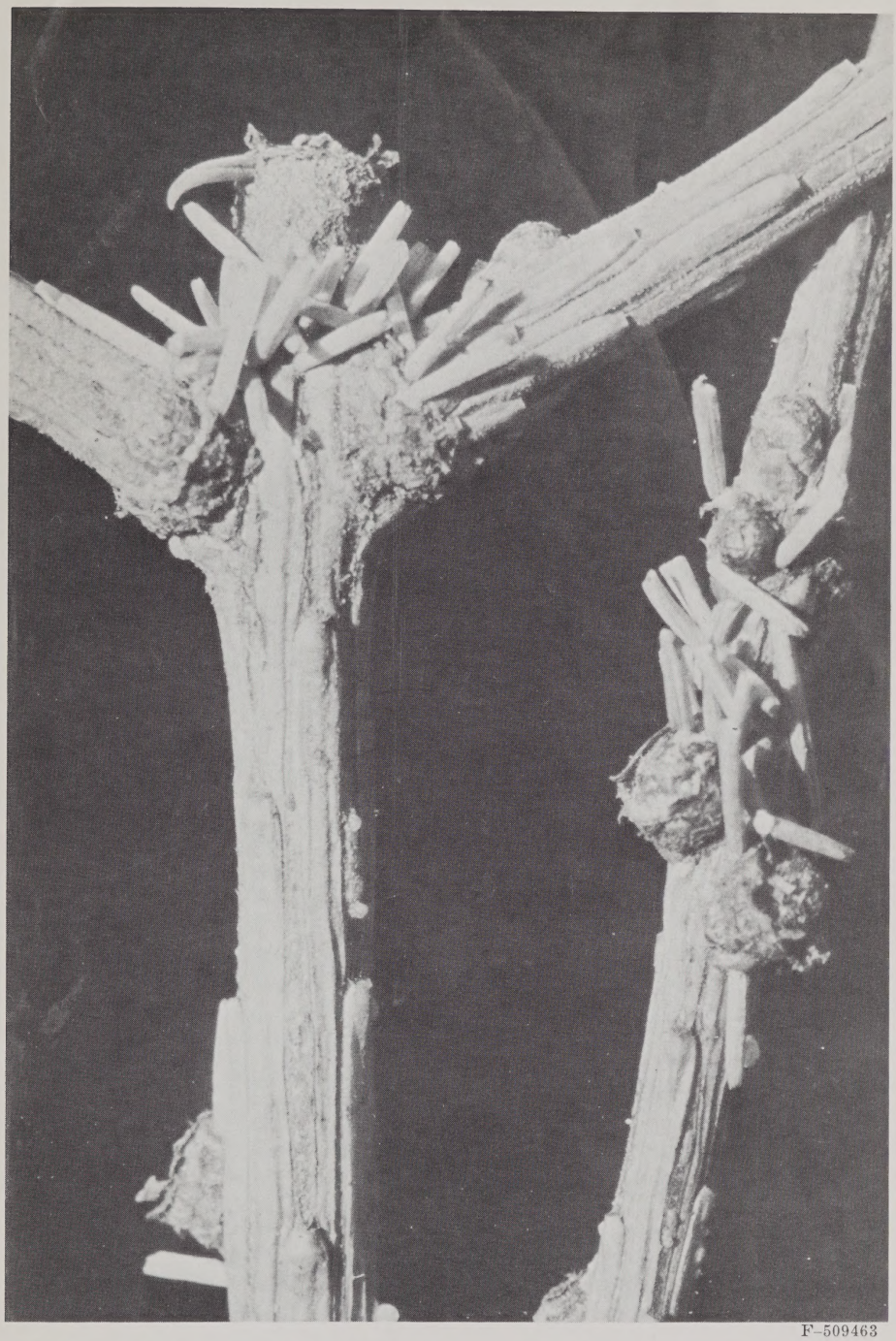

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Figure 6.—Overwintering larvae in their cases attached to western larch twigs.

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Figure 7.—Young western larch tree severely defoliated by larch casebearer.

these recommendations are still current.

References

THE LARCH CASEBEARER IN IDAHO—A NEW DEFOLIATOR RECORD FOR WESTERN FORESTS. ROBERT E. DENTON. U.S. Forest Serv. Res. Note 51, 6 pp., illus. Intermountain Forest and Range Expt. Sta. 1958.

LOW VOLUME APPLICATION OF MALATHION BY HELICOPTER FOR CONTROLLING LARCH CASEBEARER. ROBERT E. DENTON AND SCOTT TUNNOCK. J. Econ. Entomol. 61: 582-583. 1968.

LARCH CASEBEARER AND OTHER FACTORS INVOLVED WITH DETERIORATION OF WESTERN LARCH STANDS IN NORTHERN IDAHO. SCOTT TUNNOCK, ROBERT E. DENTON, CLINTON E. CARLSON, AND WILLIS W. JANSSEN. U.S. Forest Serv. Res. Pap. INT-68, 10 pp., illus. Intermountain Forest and Range Expt. Sta. 1969.

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